

Transforming Healthcare Sustainability Through QR-Enabled Patient Engagement

Category: Digital Excellence

Focus Area: Patient Engagement

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Problem Statement

Healthcare organizations continue to face the dual challenge of delivering patient-centred care while minimizing their environmental footprint. At our hospital, patient education materials, PREM (Patient Reported Experience Measures), and PROM (Patient Reported Outcome Measures) were predominantly paper-based, leading to significant consumption of printed resources, manual data handling, delayed feedback analysis, and limited accessibility for patients and caregivers. On average, approximately 10,000–12,000 patient education pamphlets and 2,000–2,500 PREM/PROM forms were utilized every month, contributing to substantial paper usage and operational inefficiencies. A digital solution was essential to transform these processes into a sustainable, accessible, and data-driven model. The objective was to reduce paper waste, enhance patient engagement, provide instant access to health education resources, and facilitate real-time capture of patient experience and outcome data. QR-code technology offered an innovative and scalable approach, enabling patients and families to access educational content and submit feedback seamlessly through their smart phones. The primary stakeholders impacted included patients and families, clinicians, nursing professionals, quality and patient safety teams, infection prevention professionals, hospital administrators, and information technology teams. This initiative directly supported key NABH 6th Edition requirements, including PRE.5 (Patient & Family Education), PRE.7.b (PREM), PSQ.4.d (PROM), AAC.11.e (Preventive and Promotive Health Education), IPC.1.i (Infection Prevention

Objectives

To promote sustainable healthcare and enhance patient engagement, the Quality Department developed an in-house QR-enabled Digital Patient Engagement Platform. The solution was designed to replace paper-based PREM, PROM, and patient education processes with a seamless digital experience.

Patients and caregivers can access health education materials, submit feedback, and report treatment outcomes by scanning QR codes placed across clinical areas. The platform supports real-time data collection, analysis, and quality improvement while significantly reducing paper consumption.

This innovative in-house solution has transformed patient engagement into a scalable, data-driven, and environmentally responsible digital ecosystem, supporting both healthcare excellence and sustainability objectives.

Key Features:

- * Dashboard for real-time analytics
- * KPI monitoring and performance tracking
- * Patient safety awareness and tracking modules
- * Automated feedback collection and reporting
- * Trend analysis for continuous quality improvement
- * Paperless and environmentally sustainable workflow

Intervention & Methodology

- * Rollout completed within 18–2 months from concept to deployment.
- * QR codes deployed across key patient care areas and clinical departments.
- * More than 84 healthcare professionals including clinicians, nursing staff, quality personnel, and support teams were sensitized and trained on the digital platform.
- * Successfully implemented across Cardiology, Endoscopy, Radiology, ENT, Blood Centre, Dialysis, General Surgery, Gynaecology, Orthopaedics, and all Clinical Wards.
- * Led by the Group Quality Head with active support from the Quality Team, Medical Admin, Nursing Services, Clinical Departments, Infection Prevention & Control Team, and Patient Safety Champions.
- * Established departmental champions to drive adoption, monitor utilization, and support continuous improvement.

This collaborative initiative enabled rapid adoption, enhanced patient engagement, and accelerated the organization's transition toward environmentally sustainable and digitally enabled healthcare delivery.

Results & Impact

The QR-based Digital Patient Engagement Initiative significantly improved operational efficiency, quality outcomes, and environmental sustainability by

replacing paper-based PREM, PROM, and patient education processes with a digital platform.

Operational Improvements

- * Eliminated approximately 12,000–14,500 paper documents per month, reducing printing, storage, and administrative costs.
- * Enabled instant access to patient education materials through QR codes, improving information accessibility and reducing dependency on printed pamphlets.
- * Reduced manual data collection and accelerated feedback analysis through real-time digital dashboards and KPI monitoring.

Quality and Patient Safety Improvements

- * Improved patient engagement and participation in care through easy access to PREM, PROM, and health education resources.
- * Enhanced documentation compliance, data accuracy, and audit readiness through automated data capture and centralized reporting.
- * Strengthened patient safety awareness related to infection prevention, fall prevention, medication safety, and preventive healthcare.

Accreditation and Digital Health Impact

- * Supported NABH 6th Edition requirements including PRE.5, PRE.7.b, PSQ.4.d, AAC.11.e, IPC.1.i, and COP.11.h. & NABH Digital Health Standard 2nd Edition: AAC 1.a.

- * Advanced the organization's digital health journey through paperless workflows, technology-enabled patient engagement, and data-driven continuous quality improvement.
- * Established a scalable and sustainable model that aligns healthcare excellence with environmental stewardship.

Challenges & Critical Success Factors

The successful implementation of the QR-based Digital Patient Engagement Initiative was enabled by strong leadership from the Group Quality Head, multidisciplinary collaboration, and a shared commitment to sustainability and patient-centred care. Active involvement of the Medical Admin, Clinical, Nursing, Infection Prevention, and Quality teams facilitated rapid deployment and adoption across departments.

A key innovation was the development of an in-house QR-enabled platform integrating PREM, PROM, and Digital Health Education into a single paperless ecosystem. The solution provides real-time access to educational resources, patient feedback, outcome measurement, KPI monitoring, and dashboard-based analytics, significantly reducing paper consumption and administrative burden.

Key challenges included transitioning from traditional paper-based processes, varying levels of digital literacy among patients, and ensuring staff engagement and sustained utilization. These challenges were addressed through structured training, awareness sessions, stakeholder engagement, and continuous monitoring.

The initiative demonstrates how digital innovation, effective change management, and environmental stewardship can work together to create a scalable, sustainable, and data-driven healthcare model that enhances patient engagement while supporting quality improvement and resource conservation.

Key Learnings

Top 3 Key Learning

1. Patient engagement improves when information is easily accessible
2. • Patient-centric digital solutions improve both quality and sustainability outcomes.
3. • Small digital changes can create large environmental impact

Recommendations for Other Hospitals

- * Begin with high-volume paper-based processes to maximize environmental impact.
- * Establish multidisciplinary governance involving quality, clinical, nursing, and IT teams.
- * Focus on user-friendly design and staff training to improve adoption.
- * Monitor utilization and outcomes through dashboards and KPI tracking.
- * Align digital initiatives with accreditation, patient safety, and sustainability objectives.

Few Supporting Evidence Links:

1. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUMzAyTIVSVIVKUxFoxN0JOMjZTN0pZNTFYRC4u>

2. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUOVFZWU9VQUpDQ0VKR0hHWk1LU05UV0JXSy4u>

3. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUOFU4SjNCRDFKVKZLODVOWlpMOThXOURDOS4u>

4. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUQUYyVTJNNU5BUU1YQ0o2NIY3MjUxUUJJQy4u>

5. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUOEJGSEUxUIVITEI3Ulc0REINRDBFWTgxOS4u>

6. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUMVNQMvhPUkxMT1FLUEtLNzFWREwyQldJVC4u>

7. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUODVPT05LNzBIMDhJSkkwRTIzSEozT1hBUC4u>

8. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUMTNaVkQzNEg5VTYzVVIHTTlaSE1YQkpYQS4u>

9. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUMkc2TTJQUIFBVDRMTzBYNUw4T01JSUIDQy4u>

10. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtURFJST01TTzFVSjlFNFFHWEpNRzRUR0g5Ni4u>

11. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMXQJVA2KS5kurYxMm56SpUnG4ZtUQ0I0TDhaTkk5QVczR1gwOEZST0VVTzM0Ui4u>

12. <https://forms.office.com/Pages/ResponsePage.aspx?id=oKr5ymVD-EC3nx2dMX>

Reference Sources (If Applicable)

1. NABH 6th Edition Standards
2. WHO Digital Health Strategy
3. WHO Sustainable Healthcare Framework
4. IHI Patient-Centred Care Framework
5. HELP Sustainability Excellence Guidelines